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EXAMINER ASA-695

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FAY SHARPE EALL FAGAN MINNICH  
104 EAST HUME AVENUE  
ALEXANDRIA VA 22301

ART UNIT	PAPER NUMBER
NGUYEN, N	7

DATE MAILED: 1754

10/07/99

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on July 26, 1999 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire three (3) month(s), — days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

**Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:**

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.      | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152.       |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/> _____   |

**Part II SUMMARY OF ACTION**

1. ☒ Claims 1-23 are pending in the application.  
Of the above, claims 2-9, 13-15, 19, 23 are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1, 10-12, 16-18, 20-22 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

**EXAMINER'S ACTION**

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### **DETAILED ACTION**

Applicant's election of species C-F and alumina-nickel oxide in Paper No. 6 (filed July 26, 1999) is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1, 10-12, 16-18, 20-21, 22 read on the elected species. All remaining claims are withdrawn from further consideration as being drawn to non-elected species

The drawings are objected to because in Figure 1, "Vapoir" is misspelled and the arrow for the "exhaust gas 7" appears to point to the wrong direction. Correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 10, 16-18, 20, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lercher et al (5,710,359).

Lercher '359 discloses a process for the degradation of chemical compounds which have one or more heteroatoms X, with X being F, Cl, Br, I, N, O or S, by cleavage of the C-X carbon-

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heteroatom bonds, wherein the chemical compounds or articles which contain the chemical compounds are treated with water vapor in the presence of an aluminum catalyst at 300°-600°C (note abstract). The C-X carbon-heteroatom bonds are bonds of the group C-F, C-Cl, among others (note paragraph bridging columns 1 and 2). The C-F bond as disclosed in Lercher '359 fairly suggests that C-F compounds, such CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, etc. can be degraded by the process of Lercher '359. The source of the C-F compounds is not seen as a patentable difference because C-F compounds from any source would still be degraded in the same manner in the process of Lercher '359.

The aluminum catalyst is a catalyst containing an aluminum compound such as aluminum oxide, AlOOH, aluminosilicate or spinels as active constituent. In addition, the catalyst can also contain other metals such as silver, copper, iron, cobalt, nickel, titanium, etc. preferably in the form of their oxides. Particular preference is given to a catalyst consisting of aluminum oxide or containing aluminum oxide as the main component. Lercher '359 does not specifically disclose the amount of the other metal oxide used in the aluminum oxide catalyst, however, it would have been obvious to one of ordinary skill in the art to optimize the amount of the other metal oxide to obtain the best results, i.e. to effectively degrading the C-F bonds in the chemical compounds, In re Aller 105 USPQ 233.

In the process of Lercher '359, the chemical compounds are hydrolyzed by the steam, in the presence of the catalyst to form an acid (note Example 1), HCl content is determined by passing the product gas through a water condenser, a cold trap than a NaOH charge.

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It would also have been obvious to one of ordinary skill in the art to optimize the temperature in the treating step of Lercher '359 based upon the chemical compound to be degraded to effectively cleaving the C-X bonds in these compounds.

The examiner takes Official Notice that the use of an alkaline wash solution to remove the acid formed is known and conventional in the art.

The difference is the number of chemical compounds which are suitable to be degraded by the process of Lercher '359 is too large for anticipation.

It would have been obvious to one skilled in the art to select any chemical compound among the specifically disclosed compounds, Merck & Co. Inc. v. Biocraft Laboratory Inc. 10 USPQ 1846.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lercher '359 as applied to claims 1, 10, 16-18, 20-22 above, and further in view of JP 3-249,920.

The difference not yet discussed is Lercher '359 does not disclose the presence of sulfur in the catalyst.

JP '920 discloses a method for decomposing gaseous fluorocarbon (note title). A processing agent containing sulfur or halogens is deposited on a carrier consisting of the hydroxide or oxide of a Group IV metal and/or the hydroxide or oxide of a group III metal (which would include Al). The carrier is then calcined and stabilized to form a solid extremely strong acid catalyst, and fluorocarbons are passed through the catalyst to decompose the

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fluorocarbons. Group VIII metals such as Ni, Pt, Ru, Rh, Pd and Os are further deposited on the catalyst to impart hydrogenation activity, steam reforming activity and stable catalytic activity to the catalyst (note abstract). The amount of sulfur in the catalyst can be optimized to provide the best results.

The catalyst of JP '920 is similar to that of Lercher '539.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to further add sulfur into the catalyst of Lercher '920 because JP '920 teaches that the presence of sulfur would provide a stronger and better catalyst for the hydrogenation process.

Claims 1, 10, 16-18, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene (5,414,201).

Greene discloses a process for the oxidation of volatile organic compounds. The process uses the steps of:

- a) adsorbing at least one organic compound in at least a first catalyst capable of adsorbing the organic compound at an adsorption temperature;
- b) heating at least one second catalyst downstream of the first catalyst, from an initial temperature to an oxidation temperature, the second catalyst capable of oxidizing the organic compound when heated to the oxidation temperature;

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- c) heating the first catalyst to a desorbing temperature at a rate which will permit the complete oxidation of the desorbed organic compound by the second catalyst at the oxidation temperature;
- d) cooling the first catalyst to the first adsorption temperature;
- e) cooling the second catalyst to the initial temperature (note claim 1).

The second catalyst is selected from the group consisting of at least one metal-exchanged aluminosilicate zeolite having at least one exchanged metal, at least one-metal impregnated aluminosilicate zeolite having at least one impregnated metal, and at least one metal exchanged metal-impregnated aluminosilicate zeolite having at least one exchanged metal and at least one impregnated metal, and wherein the impregnated metal is selected from the group consisting of Ti, V, Cr, Mn, Co, Ni, Cu, Fe, Mo, Mn, Pd and Pt (note column 4, lines 10-34 and claim 13).

When the catalyst is a metal-impregnated aluminosilicate zeolite and the impregnated metal is Ni, the Ni would be presence in the catalyst in the form of oxide, because based on the processes disclosed in Greene, after the zeolite catalyst is impregnated, the catalyst is calcined (note columns 5-6, under "Catalyst preparation").

The types of halogenated organics for which the catalysts as mentioned above are above are able to oxidize include fluoromethane, i.e (CF<sub>4</sub>) among others (note column 9, lines 7-33, especially, lines 26-27).

For the dependent claims and independent claim 20, see reasons stated in the above rejection.

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The difference is Greene does not exemplify the use of zeolite (i.e. alumina containing material) with impregnated Ni for oxidizing C-F compounds.

It would have been obvious to one skilled in the art to select any combination among the specifically disclosed compounds, Merck & Co. Inc. v. Biocraft Laboratory Inc. 10 USPQ 1846.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene '201 as applied to claims 1, 10, 16-18, 20-22 above, and further in view of JP '920.

The difference not yet discussed is Greene '201 does not disclose the presence of sulfur in the catalyst.

JP '920 is applied as stated above to teach the desire to include sulfur in the catalyst.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to further add sulfur into the catalyst of Greene '201 because JP '920 teaches that the presence of sulfur would provide a stronger and better catalyst for the process.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication should be directed to Ngoc-Yen Nguyen at telephone number (703) 308-2536.

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The fax phone number for this Group is (703) 305-3599 (for OFFICIAL After Final amendment only) or (703) 305-5408 (for all other OFFICIAL faxes). UNOFFICIAL fax can be sent to (703) 305-6078.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

N. M. Nguyen  
September 29, 1999

  
N. M. Nguyen  
Primary Examiner  
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